GREAT LAKES NEARSHORE WATER QUALITY MONITORING AT WATER SUPPLY INTAKES

1976-1981

G.J. Hopkins

Data Report DR 83/101

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1976-1981

by

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October 1983

Data Report DR83/101

Data Report Series

The data presented in this unreviewed report were collected by staff formerly of the Water Resources Branch of the Ontario Ministry of the Environment as part of the study on nearshore Great Lakes water quality. Every possible effort was made to ensure the accuracy of the information contained in this publication. Verification of any suspect data may be obtained by contacting the author, Laboratory Services and Applied Research Branch, Toronto (416-248-3058).

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PREFACE

A programme to enhance monitoring of nearshore Great Lakes water quality through the use of municipal water intakes was established in 1976. The programme was initiated at eleven Great Lakes locations for which biological monitoring of water quality using phytoplankton measurements was already in place. The main goal of this expanded programme was to monitor the nearshore water quality over a long term (ten years or more) with emphasis on selected trophic state indices. By 1980, an additional six locations had been added (for a total of seventeen) to the programme. This unpublished report provides a description of the programme operation and methodologies. Separate appendices provide a readily available source of basic data collected at each location for the period 1976 to 1981.

The data are periodically submitted to the Surveillance Workgroup, International Joint Commission to aid in the assessment of the Great Lakes nearshore water quality. Funding of this study has been provided, in part, through the cost-shared programme of the Canada-Ontario Agreement and the Ontario Ministry of the Environment.

ABSTRACT

Great Lakes Nearshore Water Quality Monitoring
at Water Supply Intakes. Data Report 1976-1981

A sampling programme, using eleven Great Lakes municipal water works intakes was established in 1976 for the purpose of measuring chemical and biological water quality of the nearshore waters. The programme was expanded in 1979 and now includes seventeen locations from Thunder Bay on Lake Superior to Brockville on the St. Lawrence River.

Data are available for samples which have been collected at each location on a weekly basis, all year-round. Analyses include twelve water quality parameters with emphasis on trophic state indices such as phosphorus, nitrogen, chlorophyll and phytoplankton. The main goal of the programme is to monitor the nearshore water quality for long term trend analysis. This report provides a description of the programme operation, methodologies and appendices.

The appendices (in five parts) include weekly raw data for all parameters, monthly means and graphics and have been edited further since previously published reports. No interpretation has been provided for the data presented in this report. The data collected to date have, however, indicated that water supply intakes can be used year-round as a cost-effective means of measuring nearshore Great Lakes water quality. The continuation of this programme will provide useful information, particularly for long term trend analyses.

Hopkins, G.J. 1983. Great Lakes Nearshore Water Quality Monitoring at Water Supply Intakes 1976-1981. Ont. Min. of Envir. Data Report DR83/101.

INTRODUCTION

In 1976, the Ontario Ministry of the Environment expanded its provincial phytoplankton monitoring programme at Great Lakes water supply locations to measure several chemical water quality parameters. The main goal of this expanded intake monitoring programme was to assess the nearshore water quality of the Great Lakes over a long term (ten years or more) with emphasis on selected trophic state indices such as phytoplankton, phosphorus, nitrogen, silica, chloride, conductivity and chlorophyll. Previous studies by Davis (1964), Schenk and Thompson (1965), Nicholls et al. (1980) and Nicholls (1981) have shown the usefulness of waterworks intake locations for monitoring changes in the nearshore quality of the Great Lakes. These studies have also indicated that water intakes were a cost-effective means of obtaining frequent nearshore water quality data on a year-round basis regardless of lake weather conditions.

Phytoplankton biomass measurements have been made at numerous municipal water supplies in Ontario since 1964. The addition of chemical analyses in 1976, enabled the Ministry to use the phytoplankton data as a means of assessing the effectiveness of phosphorus removal programmes (Nicholls et al. 1977). Reductions in P levels alone do not provide evidence for improved water quality. An associated decline in algal densities and a shift away from certain algal species implicated in the water quality problems of toxicity, odours and filter clogging are needed to show this effect.

The participants at eleven waterworks locations were requested to collect additional water samples on a weekly basis to complement the phytoplankton data already being collected. By 1981 this programme had been expanded to seventeen locations (Figure 1) from Thunder Bay on Lake Superior to Brockville on the St. Lawrence River (Table 1).

The purpose of this report is to provide an update to the previous reports (Hopkins 1977) and (Hopkins 1979), outlining changes in the operation of the programme, since its inception, and to edit and present the data collected to the end of 1981. No attempts have been made to analyse the data for trends at this time. Some long term trend analyses have been previously reported in the references cited above and in Hopkins (1983).

METHODS

Weekly raw water samples were collected from the water treatment plant intake pipes at a point prior to chlorination. This sample was either collected from the low lift well or from a continuously flowing tap in the plant laboratory which was connected to the intake pipe. One litre samples for phytoplankton analyses were preserved, concentrated and counted at six locations (Table 2) by a qualified operator trained by Ministry staff using the Sedgewick-Rafter A.S.U. technique (A.P.H.A. 1975). At the remaining locations, a one litre sample was collected, preserved with 2 mL of Lugol's iodine solution (containing glacial acetic acid) and forwarded to Toronto for concentration and analyses of the phytoplankton with inverted microscopes using the Utermohl method (Utermohl 1958). Aliquots of the concentrated samples were settled in 5 mL Utermohl-type plankton counting chambers, where at least one half the chamber was scanned at 300X for the larger phytoplankters. One to several radii were examined at 600X for smaller forms which were identified to the genus level. Between 200 and 400 "pieces" (cells, filaments or colonies) were counted and measured for each sample, a number that Lund et al. (1968) considered to provide acceptable precision. Phytoplankton biomass at the waterworks locations have been expressed as Areal Standard Units per mL (one A.S.U. is equivalent to 400 square microns of algae) since the algal

related problems of filter clogging and taste and odours at water treatment plants have been historically defined in areal units. For comparison with data expressed as cell volume (mm^3/L or mg/m^3) an appropriate conversion for average values is found in the equations (A.S.U./mL = 476 mm^3/L-55) (Nicholls 1981).

Raw water samples for chemical analyses were collected at the same time and place as the phytoplankton samples, placed in 500 mL polystyrene containers and shipped the same day to one of the Ministry's laboratories (Table 2) for analyses of total (unfiltered) P, soluble reactive P, ammonia-N, total Kjeldahl-N, nitrite-N, nitrate-N, chloride, conductivity and silica (unfiltered reactive silicate). One litre samples of raw water stabilized with 1 mL of a 0.5% magnesium carbonate solution were forwarded to the Ministry laboratories in Toronto or Thunder Bay (Table 2) for chlorophyll *a* and *b* analyses. Chemical samples were analyzed according to the methods described in "Outlines of Analytical Methods", (Anon 1975), Laboratory Services Branch, Ministry of the Environment and its subsequent revisions.

During the period 1976-1981 chemical methodology changes were of a minor nature and were implemented primarily to reduce sample analytical times. Inter-laboratory comparison studies completed on duplicate samples for the PLUARG programme during 1978 showed the average bias between laboratories was less than 2% for the above mentioned parameters (D. King, pers. comm.). A large block of chlorophyll data was rejected during the summer of 1977 due to laboratory analytical problems.

RESULTS AND DISCUSSION

Since 1981 all chemical samples submitted for analyses to the Toronto laboratory have been processed by the Laboratory Information System (L.I.S.). These data were subsequently transferred to the

Ministry's computerized Sample Information System (S.I.S.). Original copies of the results of individual sample submissions have been forwarded to each of the participants in the Great Lakes Intake Monitoring Programme. A summary of the first years' data (Hopkins 1977) and a summary of data for the period 1976-1978 (Hopkins 1979) have been reported previously. Since that time the data have been reviewed and edited further and additional phytoplankton data have been added. Data analyzed at locations other than Toronto and all phytoplankton data were excluded from the L.I.S. and S.I.S. files but a mass transfer of all edited data from 1976 to July 1981 was made from the HP9825 system to S.I.S. in September, 1981.

The data have been summarized by location in several formats using an HP 9825 desk-top computer. The raw data (weekly analyses) for twelve parameters with the annual minimum, maximum, mean, standard deviation (±1 S.D.) and number of samples are available as a single page print-out in long or short form (Appendices 1 to 17, part A and B). These data have been converted to monthly means (Appendices 1 to 17, part C) and are available in graphical form as (Appendices 1 to 17, part D and E) with a maximum combination of five locations or parameters per page. Table 3 summarizes the parameter ranges, detection criterion and the maximum and minimum concentration from all 17 locations included in this study from 1976 to 1981.

No attempt has been made to provide an interpretation of the data in this report. The data are provided for the information of the participants in the programme and other agencies which may have use for the data. A brief comment was made on the parameters selected for this study in a presentation to the Chief Operators Conference in 1976 (Hopkins 1976) and this information is repeated here.

Total phosphorus occurs naturally in surface waters and is an element essential to all forms of life. Artificial inputs of phosphorus play a significant role in promoting over-abundance of algae and aquatic plants which may impair water quality. Phosphorus results are used in assessing a water's potential for biological productivity as well as the efficiency of nutrient removal at waste treatment plants. Values in excess of 25 µg/L total P (Anon 1972) may be responsible for excessive algal growths. Although there is no firm criterion for phosphorus, Sawyer (1947) suggested that 300 µg/L of inorganic nitrogen (N) and 10 µg/L of soluble P at the start of the growing season could produce nuisance algal blooms - a guideline which has been substantiated by more recent work. At some of the Great Lakes intake sites there are periods when total P concentrations exceed the 25 µg/L (0.025 mg/L) level.

Nitrogen determinations consist of four components separating the organic nitrogen from the inorganic nitrogen. Briefly, the nitrogen cycle includes a decomposition process from total organic compounds to free ammonia, nitrite, and nitrate, all inorganic forms. Through algal and other plant growth, free ammonia and nitrates may be utilized to regenerate more organic matter. In assessing nutrient parameters in relation to algal growths, a good rule of thumb is to compare the total Kjeldahl nitrogen to the total P. If the algae are utilizing all the nutrients, these two parameters will be present in the ratio of 10-20:1. If the ratio does not fall within this range then N will be in limited supply at higher ratios and P will be limiting at lower ratios. The concentrations of phosphorus and nitrogen are usually minimal in natural run-off. In lakes receiving excessive inputs of sewage and/or agricultural run-off the ratio of N:P will be lower, as will be the ammonia and nitrate components during the summer growth period as a result of algal assimilation of all available inorganic nitrogen. Relative to nitrogen, phosphorus in sewage enriched lakes is often supplied in excess of the requirements for algae.

Conductivity and chloride are used together to measure the salinification of a lake system. These measurements are used to calculate the total dissolved solids which are an approximate measure of the dissolved "salts" in a lake. Chloride is a non-reactive conservative substance which reflects the influence of human activity on a water basin. Chloride concentrations increase as they move down through the Great Lakes system because of increasing road de-icing operations. Urban runoff often contains high concentrations of chloride in winter due to the application of road salt and these may affect readings obtained at waterworks locations. Conductivity is a measure of the ability of a water to carry an electric current and depends on the concentrations of ions in solution to conduct that current. It is so precise and accurate that it is often preferred to a dissolved solids test as an indicator of the dissolved solids content of a natural water sample (Anon 1981).

The element silicon is second only to oxygen in abundance and is present as silica or silicates in sand. The geological deposits in the drainage basin are the source of silicate in Great Lakes waters. Silicates are an essential nutrient for the growth of diatoms, the most common algal type in the Great Lakes and a silica depletion may cause a reduction in algal densities if diatoms are dominant, or perhaps a shift to other algae (e.g. greens or blue-green algae) not requiring SiO_2. Silicon concentrations are measured as the soluble reactive silicate ion expressed as mg Si/L.

Chlorophyll is the natural pigment component of all green plants and is used as an index of the lakes' biological productivity. Chlorophyll *a* and chlorophyll *b* are measured in ug/L quantities. Chlorophyll *a* and *b* are found in the green algae whereas the blue-greens contain only chlorophyll *a*. The chrysophytes including the diatoms and the chrysomonads contain chlorophyll *a* and *c*. Chlorophyll *c* is not measured in the Ministry

laboratory. Chlorophyll b is often very small in relation to chlorophyll a. High chlorophyll values cause greater analytical variability and interpretation of results showing values greater than 20 µg/L should be examined with caution (Anon 1981).

Chlorophyll concentrations may be used as an indicator of eutrophy. Chlorophyll a concentrations less than 2 µg/L will reflect low algal densities and unenriched conditions. Concentrations greater than 4 µg/L will reflect moderately high algal densities and enriched conditions. A single high reading may only reflect a short-lived algal pulse. It should be emphasized that there are many factors which determine the chlorophyll content of algal cells and that chlorophyll measurements provide a simple but only approximate indication of algal biomass.

Phytoplankton biomass measurements and algal taxonomy are also used to provide assessments of water quality in the Great Lakes. The dominance of certain diatom species and low biomass in Lakes Superior and Huron are indicative of oligotrophic waters whereas high algal populations dominated in the summer by blue-green algal pulses reflect the more eutrophic conditions of Lake Erie. Chrysophycean algae are common to some Great Lakes locations and frequently dominate the algal populations in the late spring and early fall. Increases in this group as a percentage of the total biomass have been shown to reflect decreases in P concentrations (Nicholls 1976). With high biomass levels of diatoms in the spring silica concentrations can become a limiting factor thus leaving room for more eutrophic green and blue-green forms to develop later in the season. Diatom populations can be lost from the water quite rapidly by sedimentation but some of the blue-greens are transported great distances. For this reason populations of green and blue-green algae are more noticeable in late summer and early fall when silica levels are at a minimum (Hopkins 1983).

Many of the data collected to date have been used to provide input to individual papers, reports, presentations and summaries which are listed in Appendix 18. The data reported here cover the first six years of the study. Long term trend analyses have not been extensively applied to all the data but a detailed interpretative report has been prepared for the Lake Huron locations (Hopkins, 1983). Reports for locations on Lake Erie and Lake Ontario are in preparation.

ACKNOWLEDGEMENTS

I wish to acknowledge the co-operation of all the water supply personnel who have faithfully collected and submitted the water samples for this study, the laboratory staff for organizing the analyses and results, to Cathy Clarke for data manipulation and to Margaret Barclay for typing the manuscript.

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Figure 1: Location of 17 municipal waterworks on the Great Lakes participating in the Great Lakes Intake Monitoring Programme 1976-1981.

Table 1: List of participant municipalities, lake location and initiation date into Great Lakes Intake Monitoring Programme.

Table 2: List of plant locations, parameters and analytical locations for samples in the Great Lakes Intake Monitoring Programme 1976-1981.

Table 3: Summary of parameters, their analytical ranges, detection criterion and minimum and maximum concentrations at 17 waterworks participating in the Great Lakes Intake Monitoring Programme from 1976-1981.

Figure 1: Great Lakes Water Works Intake Monitoring Locations 1976-1981.

Table 1: Participants in Water Intake Monitoring Programme (*MOE Plant)

Plant No.	Name	Lake	Initiation Date
1.	Goderich W.W.*	Lake Huron	Jan./76
2.	Lake Huron W.S.S.*(Grand Bend)	Lake Huron	Jan./76
3.	Lambton Area W.S.S.* (Sarnia)	Lake Huron	Feb./76
4.	Amherstburg A.W.S.*	Detroit River	Jan./76
5.	Union W.S. (Kingsville)	Lake Erie	Jan./76
6.	Blenheim Area W.S.*	Lake Erie	Jan./76
7.	Elgin Area W.S.* (St. Thomas)	Lake Erie	Jan./76
8.	Dunnville Reg'l W.S.*	Lake Erie	Jan./76
9.	South Peel W.S.* (Lakeview)	Lake Ontario	Jan./76
10.	Kingston W.W.	Lake Ontario	Jan./76
11.	Brockville W.W.	St. Lawrence River	Jan./76
12.	Bertie Twp. W.W. (Rosehill Water Plant) Reg'l Mun. of Niagara.	Lake Erie	Sept./78
13.	Terrace Bay W.W. (Kimberly-Clark Paper Co.)	Lake Superior	May/79
14.	Thunder Bay W.W. (Bare Point Intake)	Lake Superior	July/79
15.	Metro Toronto (R.L. Clark Plant)	Lake Ontario	Sept./79
16.	Grimsby W.W. (Reg'l Mun. of Niagara)	Lake Ontario	Oct./80
17.	Cobourg W.W.	Lake Ontario	Oct./80

Table 2: Water Treatment Plant Locations, parameters analyzed and locations of analyses from 1976-81. 1 = S.W. Region Lab. (London); 2 = Central Lab. (Toronto); 3 = S.E. Region Lab. (Kingston); 4 = in W.W. plant; 5 = N.W. Region Lab. (Thunder Bay).

Location		Parameters						
		P	N	Cl	Cond.	Si	Chloro	Phyto
Goderich	'76-'81	1	1	1	1	1	?	4
Grand Bend	'76-'81	1	1	1	1	1	?	4
Sarnia	'76-'81	1	1	1	1	1	?	4
Amherstburg	1976	1	1	1	1	1	?	4
"	1977	?	?	?	?	?	?	4/?
"	'78-'81	2	2	2	?	2	?	?
Union	'76-'81	1	1	1	1	1	?	4
Blenheim	'76-'81	1	1	1	1	1	?	4
Elgin	'76-'81	1	1	1	1	1	?	?
Dunnville	'76-'80	2	2	2	2	?	?	4
"	1981	2	2	2	2	2	?	?
South Peel	'76-'81	2	2	2	2	?	?	4
Kingston	'76-'77	3	3	3	3	?	-	?
"	'78-'81	3	3	3	3	?	?	?
Brockville	'76-'77	3	3	3	3	?	-	?
"	'78-'81	3	3	3	3	?	?	?
Bertie Twp.	'78-'81	?	?	?	?	?	?	-
Terrace Bay	'79-'81	5	5	5	5	5	5	?
Thunder Bay	'79-'81	5	5	5	5	5	5	?
Metro Toronto	'79-'81	?	?	?	?	?	?	?
Grimsby	'80-'81	?	?	?	?	?	?	?
Cobourg	'80-'81	?	?	?	?	?	?	?

Table 3: Summary of parameters, their analytical ranges and detection criterion, and their maximum and minimum concentrations to date in this study*.

Parameter	Range on Undiluted Sample**	Detection Criterion	Concentration 1976-1981	
			Max.	Min.
Total Phosphorus as P	0.004-0.2 mg/L	0.003 mg/L	0.850	<.001
Soluble Reactive Phosphorus as P	0.004-0.100 mg/L	0.0029 mg/L	0.220	<.001
Nitrogen - Free Ammonia	0.007-0.400 mg/L	0.006 mg/L	1.100	<.002
Nitrogen - Total Kjeldahl	0.04 -2.0 mg/L	.036 mg/L	2.450	0.010
Nitrogen - Nitrite (NO_2)	0.001-0.1 mg/L	.002 mg/L	0.335	<.001
Nitrogen - Nitrate (NO_3)	Calculated	-	5.500	<.01
Chloride	0.1 -10 mg/L	0.18 mg/L	49	1.0
Conductivity	<500 µmho/cm	0.3 µmho/cm	560	83
Reactive Silicon	0.09 -5.0 mg/L	0.08 mg/L	3.25	<.02
Chlorophyll a in µg/L	<20 µg/L	N.A.	20.6	<0.1
Chlorophyll b in µg/L	<20 µg/L	N.A.	9.3	<0.1
Phytoplankton Biomass	A.S.U./mL	N.A.	22,569	<1.0

*Great Lakes Intake Monitoring Programme

**In "Outlines of Analytical Methods" Anon 1981.

N.A. - Not applicable

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*in 5 parts (A, B, C, D, and E) for Appendices 1-17.

APPENDIX 1:	Goderich Water Works		1976-1981
APPENDIX 2:	Lake Huron Water Supply System	(Grand Bend)	1976-1981
APPENDIX 3:	Lambton Area Water Supply System	(Sarnia)	1976-1981
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APPENDIX 17:	Cobourg Water Works		1980-1981

APPENDIX 18: Reports, papers and presentations prepared to date based on data collected from Great Lakes Water Intake Monitoring Programme.

Part A (Append. 1-17): Detailed annual summary of weekly raw water data for twelve parameters at each water treatment plant, 1976-1981.

Part B (Append. 1-17): Short annual summary of weekly raw water data for twelve parameters at each water treatment plant, 1976-1981.

Part C (Append. 1-17): Annual summary of weekly raw water data converted to monthly means (±1 S.D.) for twelve parameters at each water treatment plant, 1976-1981.

Part D (Append. 1-17): Graphical presentation of data as monthly means (±1 S.D.) for five parameters at one location or one parameter for five locations, 1976-1981.

Part E (Append. 1-17): Graphical presentation of data as monthly means (±1 S.D.) for three parameters at one location or one parameter for three locations, 1976-1981.

Appendix 18: Reports, papers and presentations prepared to date based on data collected from the Great Lakes Intake Monitoring Programme.

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Appendix No. 9 for Report:

GREAT LAKES NEARSHORE WATER QUALITY

MONITORING AT WATER SUPPLY INTAKES

1976-1981

by

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October 1983

Data Report DR83/101

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1976

	Tot.P	D.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 5	-	-	-	-	-	-	-	-	-	-	-	280
JAN 12	-	-	-	-	-	-	-	-	-	-	-	319
JAN 19	-	-	-	-	-	-	-	-	-	-	-	172
JAN 26	0.060	0.000	0.100	0.400	0.000	0.000	34.0	351	0.65	-	-	101
FEB 2	0.040	0.040	0.000	0.100	0.000	0.600	34.0	356	0.45	1.0	-	3
FEB 9	0.080	0.020	0.000	0.100	0.000	0.400	32.0	347	0.40	1.2	-	78
FEB 16	0.060	0.000	0.000	0.400	0.000	0.000	49.0	373	0.80	1.4	-	116
FEB 23	0.080	0.040	0.000	0.600	0.000	0.800	39.0	368	0.60	1.3	-	39
MAR 1	0.060	0.040	0.100	0.400	0.000	0.600	36.0	350	0.65	1.7	-	101
MAR 8	0.060	0.040	0.100	0.500	0.010	0.900	36.0	375	1.00	1.6	-	119
MAR 15	0.060	0.040	0.400	0.600	0.000	0.600	48.0	365	1.00	2.3	1.0	46
MAR 22	0.060	0.040	0.100	0.300	0.000	0.600	34.0	345	1.10	3.0	0.9	82
MAR 29	0.060	0.020	0.100	0.500	0.000	0.500	36.0	345	0.75	2.0	0.7	54
APR 5	-	-	-	-	-	-	-	-	-	-	-	155
APR 12	-	-	-	-	-	-	-	-	-	-	-	269
APR 20	0.040	0.000	0.000	0.500	0.000	0.400	34.0	340	0.30	1.9	0.7	757
APR 26	0.280	0.060	0.300	0.900	0.030	0.600	42.0	365	0.45	13.0	1.0	487
MAY 3	-	-	-	-	-	-	-	-	-	6.2	-	-
MAY 10	0.050	0.020	0.000	0.200	0.010	0.500	31.0	350	0.30	12.0	-	354
MAY 17	0.047	0.011	0.036	0.430	0.005	0.365	30.0	360	0.05	16.0	-	890
MAY 25	0.039	0.009	0.008	0.330	0.004	0.386	28.5	340	0.00	11.0	1.1	1388
MAY 31	0.053	0.021	0.072	0.490	0.004	0.286	31.5	345	0.45	7.0	-	342
JUN 10	0.027	0.013	0.022	0.240	0.001	0.194	28.5	335	0.05	4.8	-	283
JUN 17	0.034	0.013	0.034	0.320	0.003	0.257	28.5	342	0.25	3.3	-	147
JUN 24	0.065	0.018	0.062	0.460	0.005	0.175	29.0	338	0.15	-	-	377
JUN 28	-	-	-	-	-	-	-	-	-	-	-	371
JUL 5	0.075	0.026	0.035	0.440	0.013	0.342	38.0	375	0.20	7.3	-	443
JUL 12	0.023	0.008	0.032	0.210	0.004	0.341	28.5	335	0.30	3.2	-	364
JUL 19	0.026	0.009	0.018	0.300	0.005	0.250	28.0	330	0.25	4.2	-	266
JUL 26	0.039	0.005	0.018	0.400	0.007	0.253	29.0	335	2.85	9.2	-	2038
AUG 3	0.036	0.008	0.028	0.340	0.005	0.090	28.0	325	0.25	2.7	-	110
AUG 9	0.045	0.017	0.048	0.420	0.007	0.158	28.0	327	0.45	4.9	-	102
AUG 17	0.056	0.014	0.015	0.330	0.001	0.269	29.5	345	1.75	0.5	-	219
AUG 23	0.021	0.012	0.042	0.240	0.009	0.276	28.0	-	0.25	2.9	-	120
AUG 30	0.018	0.010	0.008	0.260	0.002	0.283	28.0	335	0.40	1.9	-	111
SEP 6	0.056	0.031	0.038	0.310	0.003	0.387	29.5	345	0.35	1.2	-	137
SEP 13	0.024	0.010	0.002	0.270	0.001	0.314	28.0	335	0.55	1.0	-	79
SEP 20	0.037	0.005	0.012	0.280	0.003	0.157	29.5	340	0.30	6.1	-	241
SEP 27	0.027	0.012	0.167	0.410	0.008	0.352	31.5	350	0.40	1.8	-	255
OCT 4	0.022	0.010	0.024	0.150	0.003	0.327	29.0	340	0.40	3.3	-	415
OCT 11	-	-	-	-	-	-	-	-	-	-	-	190
OCT 18	0.018	0.012	0.014	0.220	0.002	0.253	29.0	390	0.35	1.3	-	53
OCT 25	0.081	0.027	0.048	0.350	0.005	0.380	29.5	345	0.35	5.0	-	292
NOV 1	0.047	0.020	0.046	0.320	0.006	0.354	30.0	340	0.35	2.6	-	240
NOV 8	0.043	0.019	0.098	0.390	0.011	0.399	32.5	365	0.40	3.8	-	314
NOV 15	0.015	0.006	0.010	0.240	0.002	0.288	29.0	330	0.30	3.1	-	95
NOV 22	0.016	0.007	0.010	0.230	0.002	0.358	31.0	350	0.30	2.1	0.7	284
NOV 29	0.023	0.009	0.018	0.250	0.004	0.186	29.5	340	0.25	2.5	-	145
DEC 6	0.035	0.013	0.010	0.280	0.002	0.278	30.0	340	0.30	2.6	-	55
DEC 14	0.026	0.011	0.012	0.210	0.001	0.289	30.5	339	0.50	1.9	0.3	93
DEC 20	0.103	0.081	0.166	0.430	0.021	0.354	32.0	345	0.40	1.4	-	86
DEC 30	0.042	0.025	0.058	0.280	0.009	0.341	30.5	345	0.35	2.8	-	207
min.	0.015	0.000	0.000	0.100	0.000	0.000	28.0	325	0.00	0.5	0.3	3
max.	0.280	0.081	0.400	0.900	0.030	0.900	49.0	390	2.85	16.0	1.1	2038
mean	0.050	0.019	0.055	0.348	0.005	0.351	32.0	347	0.50	4.0	0.8	280

Appendix 9 - Part A

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1977

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 4	-	-	-	-	-	-	-	-	-	-	-	
JAN 13	0.028	0.017	0.062	0.240	0.003	0.352	30.5	350	0.35	1.2	-	49
JAN 17	0.022	0.015	0.020	0.250	0.001	0.354	29.0	350	0.40	1.1	-	109
JAN 24	0.043	0.016	0.020	0.360	0.001	0.350	28.0	350	0.35	0.9	-	70
FEB 3	0.028	0.014	0.052	0.270	0.003	0.372	31.0	358	0.30	1.5	-	79
FEB 7	0.026	0.014	0.011	0.220	0.002	0.332	29.0	350	0.30	0.8	-	103
FEB 17	0.034	0.019	0.076	0.330	0.003	0.347	33.5	360	0.25	0.9	0.5	38
FEB 22	0.084	0.001	0.284	0.550	0.005	0.345	34.5	360	0.35	0.9	0.7	55
FEB 28	0.086	0.036	0.192	0.560	0.008	0.372	36.5	380	0.35	1.9	0.5	57
MAR 7	0.104	0.049	0.182	0.580	0.014	0.446	34.0	350	0.45	3.0	0.8	90
MAR 14	0.048	0.021	-	0.640	0.009	0.241	35.5	360	0.45	1.2	0.3	115
MAR 21	0.078	0.030	0.156	0.500	0.008	0.417	34.5	365	0.35	2.0	1.0	45
MAR 31	0.036	0.016	0.078	0.350	0.005	0.445	32.5	365	0.45	1.5	0.1	274
APR 4	0.133	0.025	0.070	0.530	0.005	0.395	33.0	355	0.30	-	-	135
APR 12	0.041	0.014	0.056	0.400	0.003	0.387	30.5	360	0.20	-	-	112
APR 18	0.052	0.037	0.156	0.430	0.004	0.301	32.0	360	0.15	-	-	180
APR 25	0.043	0.013	0.072	0.350	0.008	0.437	31.0	360	0.20	-	-	394
MAY 2	0.030	0.008	0.032	0.350	0.003	0.317	-	350	-	-	-	421
MAY 9	0.050	0.021	0.230	0.590	0.012	0.348	32.5	370	0.10	-	-	200
MAY 16	0.052	0.030	0.098	0.420	0.008	0.392	30.5	350	0.10	-	-	825
MAY 26	0.027	0.008	0.138	0.500	0.014	0.326	31.0	355	0.05	-	-	389
MAY 30	0.060	0.025	0.082	0.420	0.015	0.330	29.5	345	0.10	-	-	285
JUN 6	0.025	0.010	0.120	0.660	0.012	0.313	30.5	340	0.05	-	-	620
JUN 13	0.046	0.013	0.042	0.380	0.006	0.309	28.5	337	0.05	-	-	205
JUN 20	0.030	0.011	0.036	0.260	0.005	0.320	28.0	340	0.10	-	-	189
JUN 27	0.038	0.013	0.030	0.310	0.006	0.334	27.5	340	0.10	-	-	99
JUL 4	0.037	0.022	0.073	0.350	0.010	0.410	29.0	345	0.25	-	-	306
JUL 11	0.045	0.010	0.022	0.390	0.006	0.340	29.0	340	0.10	-	-	179
JUL 18	0.032	0.012	0.034	0.320	0.005	0.325	28.0	340	0.10	-	-	506
JUL 25	0.026	0.009	0.034	0.310	0.004	0.351	27.5	336	0.10	-	-	-
AUG 4	0.086	0.017	0.012	0.580	0.004	0.321	29.5	340	0.10	-	-	505
AUG 11	0.080	0.007	0.066	0.320	0.001	0.189	30.5	335	0.05	-	-	436
AUG 18	0.027	0.011	0.032	0.290	0.004	0.261	28.0	335	0.25	-	-	136
AUG 22	0.020	0.012	0.020	0.260	0.005	0.295	28.0	335	0.10	-	-	103
AUG 29	0.020	0.010	0.030	0.330	0.004	0.361	31.0	340	0.15	-	-	138
SEP 6	0.042	0.020	0.128	0.450	0.003	0.107	28.5	325	0.10	-	-	198
SEP 12	0.020	0.007	0.012	0.300	0.001	0.124	27.5	320	0.15	-	-	-
SEP 19	0.023	0.009	0.030	0.330	0.003	0.172	28.0	325	0.10	-	-	206
SEP 26	0.057	0.021	0.040	0.340	0.006	0.204	28.0	320	0.15	-	-	70
OCT 3	0.150	0.026	0.066	0.440	0.006	0.309	29.5	325	0.15	-	-	132
OCT 11	0.025	0.011	0.012	0.270	0.001	0.334	28.0	345	0.40	-	-	80
OCT 17	0.024	0.013	0.024	0.250	0.001	0.374	29.5	343	0.50	-	-	46
OCT 24	0.033	0.016	0.026	0.270	0.003	0.412	30.0	341	0.35	-	-	102
OCT 31	0.043	0.009	0.036	0.390	0.003	0.350	31.0	352	0.25	-	-	193
NOV 7	0.055	0.014	0.174	0.510	0.011	0.379	30.0	344	0.05	-	-	575
NOV 14	0.035	0.016	0.050	0.330	0.002	0.468	29.0	337	0.15	5.3	1.2	224
NOV 21	0.085	0.020	0.014	0.380	0.002	0.323	29.5	346	0.25	1.2	0.7	59
NOV 28	0.032	0.013	0.010	0.250	0.001	0.302	28.5	334	0.35	9.3	3.6	82
DEC 5	0.031	0.011	0.078	0.340	0.006	0.433	29.0	348	0.30	1.8	1.0	118
DEC 12	0.042	0.014	0.014	0.240	0.002	0.378	30.0	339	0.30	1.7	0.8	83
DEC 19	0.154	0.023	0.050	0.610	0.008	0.387	39.5	375	0.25	20.6	9.3	656
DEC 28	-	-	-	-	-	-	-	-	0.40	3.6	3.3	129
									-	-	-	39
min.	0.020	0.001	0.010	0.220	0.001	0.107	27.5	320	0.05	0.8	0.1	38
max.	0.154	0.049	0.234	0.650	0.015	0.468	39.5	380	0.50	20.6	9.3	825
mean	0.049	0.017	0.069	0.386	0.005	0.336	30.4	347	0.23	3.2	1.7	209
s.dev.	0.032	0.009	0.063	0.119	0.004	0.078	2.6	13	0.13	4.7	2.4	185
#samples	50	50	49	50	50	50	49	50	49	19	14	50

9-A Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1978

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 3	0.029	0.017	0.010	0.250	0.002	0.393	30.0	342	0.35	0.7	0.5	-
JAN 9	0.065	0.031	0.172	0.450	0.010	0.490	45.0	396	0.40	1.4	0.5	93
JAN 16	0.050	0.018	0.050	0.300	0.004	0.391	35.5	366	0.40	0.6	0.4	159
JAN 23	0.017	0.016	0.040	0.280	0.004	0.381	29.5	340	0.30	1.0	1.0	32
JAN 30	0.031	0.012	0.022	0.270	0.005	0.375	37.5	365	0.30	0.7	0.4	35
FEB 6	0.076	0.017	0.014	0.350	0.002	0.348	30.0	336	0.25	2.8	2.1	136
FEB 13	0.020	0.009	0.014	0.250	0.004	0.441	32.0	354	0.35	0.9	0.5	29
FEB 20	0.020	0.012	0.010	0.230	0.001	0.375	28.0	334	0.30	0.4	0.2	87
FEB 27	0.023	0.011	0.000	0.240	0.003	0.372	29.5	342	0.20	1.0	0.1	78
MAR 6	0.057	0.037	0.008	0.310	0.003	0.412	30.0	346	0.30	0.8	0.3	80
MAR 13	0.026	0.015	0.026	0.250	0.004	0.376	30.5	339	0.25	1.0	0.4	121
MAR 20	-	-	-	-	-	-	-	-	-	-	-	90
MAR 28	-	-	-	-	-	-	-	-	-	-	-	126
APR 3	-	-	-	-	-	-	-	-	-	-	-	86
APR 10	0.031	0.017	0.064	0.330	0.010	0.440	30.5	340	0.35	3.0	1.9	164
APR 17	0.028	0.010	0.016	0.260	0.003	0.420	29.0	335	0.30	2.0	0.5	-
APR 24	-	-	-	-	-	-	-	-	-	-	-	113
MAY 1	0.029	0.006	0.070	0.330	0.006	0.365	30.0	335	0.15	0.7	0.7	125
MAY 8	0.021	0.012	0.032	0.340	0.064	0.355	31.5	345	0.10	3.3	0.0	136
MAY 15	0.121	0.015	0.230	0.750	0.024	0.430	36.5	370	0.35	2.2	0.7	671
MAY 23	0.023	0.008	0.046	0.310	0.014	0.355	29.0	330	0.15	1.5	0.4	347
MAY 29	0.034	0.034	0.350	0.640	0.092	0.730	33.5	345	0.20	4.3	0.0	395
JUN 5	0.026	0.006	0.054	0.350	0.009	0.335	29.0	330	0.05	3.9	0.1	275
JUN 12	0.019	0.009	0.024	0.310	0.004	0.510	28.5	325	0.10	1.8	0.7	130
JUN 19	0.016	0.005	0.030	0.280	0.006	0.300	28.5	325	0.15	2.9	0.0	278
JUN 26	0.022	0.005	0.022	0.320	0.004	0.290	29.5	325	0.20	2.4	0.0	560
JUL 4	0.051	0.003	0.042	0.440	0.007	0.185	32.5	330	0.05	9.2	0.0	783
JUL 10	0.024	0.006	0.042	0.350	0.005	0.355	27.5	320	0.20	2.5	0.1	202
JUL 17	0.028	0.004	0.062	0.350	0.009	0.355	28.5	325	0.35	2.2	0.1	400
JUL 24	0.018	0.004	0.020	0.300	0.004	0.340	28.0	315	0.20	4.3	0.0	383
AUG 1	0.028	0.005	0.042	0.390	0.007	0.313	28.5	320	0.15	3.1	0.0	401
AUG 8	0.040	0.100	0.000	0.400	0.020	0.200	29.0	325	0.25	2.0	0.4	137
AUG 16	0.033	0.004	0.060	0.350	0.026	0.300	29.0	325	0.15	4.9	0.2	106
AUG 21	0.025	0.006	0.024	0.260	0.003	0.327	28.5	320	0.25	0.9	0.4	154
AUG 28	0.041	0.012	0.022	0.340	0.002	0.180	27.5	310	0.10	3.8	0.7	92
SEP 5	0.015	0.007	0.022	0.230	0.002	0.195	27.5	310	0.15	1.8	0.5	125
SEP 11	-	-	-	-	-	-	-	-	-	-	-	173
SEP 18	0.076	0.015	0.016	0.380	0.003	0.165	27.5	315	0.15	3.3	0.9	93
SEP 25	0.022	0.010	0.004	0.230	0.004	0.220	26.5	305	0.15	1.5	0.6	59
OCT 2	-	-	-	-	-	-	-	-	-	-	-	67
OCT 10	-	-	-	-	-	-	-	-	-	-	-	36
OCT 16	0.013	0.006	0.015	0.220	0.002	0.410	29.0	320	0.20	1.2	0.8	137
OCT 24	0.011	0.006	0.010	0.180	0.002	0.395	28.0	330	-	1.2	0.4	216
OCT 31	0.067	0.007	0.010	0.350	0.002	0.405	28.0	325	0.20	6.5	1.6	319
NOV 5	-	-	-	-	-	-	-	-	-	-	-	142
NOV 14	-	-	-	-	-	-	-	-	-	-	-	-
NOV 20	-	-	-	-	-	-	-	-	-	-	-	551
NOV 27	-	-	-	-	-	-	-	-	-	-	-	329
DEC 4	-	-	-	-	-	-	-	-	-	-	-	219
DEC 11	-	-	-	-	-	-	-	-	-	-	-	502
DEC 18	-	-	-	-	-	-	-	-	-	-	-	96
DEC 25	0.019	0.009	0.012	0.290	0.003	0.422	30.5	340	0.40	1.3	0.5	81
min.	0.011	0.003	0.000	0.180	0.001	0.165	26.5	305	0.05	0.4	0.0	29
max.	0.121	0.100	0.350	0.750	0.092	0.730	45.0	396	0.40	9.2	2.1	783
mean	0.034	0.014	0.045	0.328	0.010	0.359	30.2	334	0.23	2.3	0.5	207
s.dev.	0.022	0.016	0.067	0.107	0.018	0.104	3.5	18	0.10	1.8	0.5	175
#samples	38	38	38	38	38	38	38	38	37	38	38	49

9-A Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKVIEW) 1979

	Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 3	-	-	-	-	-	-	-	-	-	-	-	222
JAN 10	0.013	0.012	0.026	0.220	0.002	0.397	29.0	330	0.30	0.7	0.4	65
JAN 15	0.027	0.013	0.036	0.250	0.002	0.357	29.5	330	0.30	1.4	0.5	94
JAN 22	0.027	0.014	0.044	0.270	0.004	0.391	31.5	335	0.35	1.5	1.4	47
JAN 29	0.024	0.010	0.056	0.420	0.006	0.403	41.5	365	0.65	1.3	1.3	91
FEB 5	0.023	0.010	0.013	0.360	0.003	0.411	33.5	340	0.25	1.2	0.6	93
FEB 12	0.022	0.012	0.042	0.380	0.003	0.392	30.5	330	0.30	1.3	-	85
FEB 19	0.017	0.011	0.036	0.270	0.002	0.382	29.0	325	0.25	0.6	0.3	79
FEB 27	0.050	0.015	0.052	0.340	0.006	0.416	35.0	365	0.35	2.4	0.4	122
MAR 6	0.074	0.028	0.191	0.700	0.019	0.595	38.5	340	0.55	3.6	1.5	51
MAR 12	0.033	0.012	0.017	0.530	0.004	0.432	29.0	335	0.35	1.9	1.2	108
MAR 19	0.020	0.013	0.028	0.028	0.004	0.407	29.0	340	0.35	1.4	0.3	68
MAR 26	0.036	0.014	0.030	0.380	0.005	0.503	29.5	355	0.45	2.2	0.7	97
APR 2	0.139	0.025	0.013	0.520	0.010	0.405	30.0	345	0.30	3.0	2.0	119
APR 9	0.147	0.014	0.030	0.470	0.005	0.425	30.0	350	0.35	5.8	1.1	107
APR 17	0.063	0.017	0.116	0.450	0.020	0.690	32.5	375	0.80	1.5	0.6	75
APR 23	0.026	0.007	0.042	0.310	0.005	0.415	29.5	345	0.25	1.8	0.3	174
MAY 1	0.044	0.001	0.002	0.330	0.000	0.412	34.0	380	1.55	0.1	0.1	652
MAY 7	0.050	0.005	0.048	0.410	0.009	0.391	33.0	375	0.10	10.8	0.2	483
MAY 14	0.028	0.003	0.063	0.410	0.007	0.373	31.3	350	0.10	2.9	0.9	212
MAY 22	0.025	0.015	0.062	0.340	0.006	0.334	29.5	345	0.10	4.3	0.7	527
MAY 28	0.034	0.010	0.126	0.530	0.023	0.447	32.0	355	0.20	-	-	352
JUN 4	0.037	0.009	0.005	0.440	0.003	0.077	30.5	350	0.30	4.2	0.5	-
JUN 11	0.026	0.006	0.032	0.350	0.003	0.272	27.5	335	0.05	2.0	0.0	-
JUN 18	0.024	0.008	0.034	0.420	0.003	0.317	28.5	340	0.10	2.0	0.4	334
JUN 25	0.021	0.005	0.049	0.320	0.008	0.337	28.5	337	0.10	3.1	0.7	390
JUL 3	0.020	0.004	0.017	0.290	0.004	0.216	27.5	335	0.05	2.6	0.4	398
JUL 9	0.023	0.003	0.016	0.340	0.005	0.190	28.0	335	0.10	5.1	0.9	-
JUL 16	0.034	0.012	0.063	0.410	0.016	0.289	29.0	340	0.10	4.4	0.9	207
JUL 23	0.029	0.014	0.042	0.350	0.019	0.291	28.5	340	0.30	3.8	0.9	151
JUL 30	-	-	-	-	-	-	-	-	-	2.8	0.8	-
AUG 7	-	-	-	-	-	-	-	-	-	4.2	0.5	165
AUG 13	0.035	0.008	0.025	0.360	0.002	0.233	28.0	335	0.10	2.5	0.8	-
AUG 20	0.025	0.010	0.063	0.310	0.009	0.456	28.5	345	0.15	1.0	0.6	249
AUG 27	0.060	0.000	0.010	0.600	0.000	0.200	28.0	330	0.15	2.5	0.4	146
SEP 4	0.026	0.010	0.037	0.320	0.004	0.231	27.5	315	0.20	2.3	1.1	181
SEP 10	0.026	0.008	0.018	0.270	0.002	0.273	27.5	330	0.25	3.6	1.0	282
SEP 17	0.012	0.005	0.014	0.210	0.001	0.314	27.5	335	0.25	1.4	0.6	150
SEP 24	0.028	0.010	0.024	0.250	0.003	0.422	28.0	340	0.25	2.7	0.6	274
OCT 1	0.026	0.003	0.028	0.350	0.003	0.237	27.5	335	0.10	5.8	0.9	334
OCT 9	0.021	0.007	0.013	0.220	0.002	0.343	27.5	335	0.25	1.0	0.6	116
OCT 15	0.020	0.000	0.000	0.400	0.000	0.400	35.0	368	0.30	1.1	0.5	103
OCT 22	0.023	0.012	0.024	0.230	0.005	0.455	29.0	345	0.30	3.5	0.6	213
OCT 29	0.017	0.005	0.004	0.240	0.001	0.379	28.0	340	0.25	4.4	0.6	331
NOV 5	-	-	-	-	-	-	-	-	-	4.1	0.7	391
NOV 13	0.125	0.054	0.326	1.000	0.070	3.130	30.0	350	0.25	-	-	-
NOV 19	0.032	0.007	0.015	0.290	0.005	0.445	29.5	350	0.10	6.9	0.7	614
NOV 26	0.067	0.020	0.083	0.450	0.009	0.526	31.5	355	0.25	3.8	1.4	530
DEC 3	0.031	0.008	0.012	0.310	0.004	0.616	30.5	330	-	4.2	1.1	513
DEC 10	-	-	-	-	-	-	-	-	-	2.3	0.7	-
DEC 17	-	-	-	-	-	-	-	-	-	2.9	0.4	-
DEC 24	-	-	-	-	-	-	-	-	-	-	-	589
min.	0.012	0.000	0.000	0.028	0.000	0.077	27.5	315	0.05	0.1	0.0	47
max.	0.147	0.054	0.326	1.000	0.070	3.130	41.5	380	1.55	10.8	2.0	652
mean	0.038	0.011	0.045	0.370	0.007	0.436	30.2	345	0.28	3.1	0.7	244
s.dev.	0.030	0.009	0.056	0.150	0.011	0.426	3.0	15	0.25	2.2	0.4	176
#samples	45	45	45	45	45	45	45	45	44	48	47	44

9-A Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1980

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 2	-	-	-	-	-	-	-	-	-	2.7	0.1	-
JAN 8	0.053	0.022	0.048	0.240	0.012	0.598	30.5	355	0.50	3.8	0.9	282
JAN 14	0.048	0.021	0.024	0.530	0.005	0.490	30.0	340	0.40	2.9	0.6	320
JAN 21	-	-	-	-	-	-	-	-	-	1.6	0.2	215
JAN 28	0.018	0.003	0.002	0.240	0.002	0.443	29.5	330	0.45	1.1	0.5	96
FEB 4	0.021	0.012	0.023	0.240	0.004	0.409	28.5	340	0.45	1.5	0.1	224
FEB 11	0.023	0.007	0.042	0.250	0.006	0.454	30.0	350	0.45	1.7	0.2	187
FEB 18	0.020	0.010	0.016	0.250	0.003	0.388	28.0	330	0.25	1.6	0.1	255
FEB 25	0.037	0.005	0.036	0.310	0.007	0.518	36.5	375	0.35	3.5	0.7	261
MAR 4	0.024	0.004	0.008	0.300	0.002	0.338	30.0	350	0.25	5.0	0.4	372
MAR 10	0.027	0.003	0.004	0.360	0.003	0.337	35.5	362	0.20	4.5	0.7	-
MAR 17	0.048	0.012	0.078	0.430	0.003	0.407	36.0	365	0.25	6.5	0.1	590
MAR 24	-	-	-	-	-	-	-	-	-	-	-	353
MAR 31	0.203	0.017	0.058	0.680	0.003	0.417	31.5	345	0.30	12.4	1.4	-
APR 8	-	-	-	-	-	-	-	-	-	2.9	0.5	512
APR 14	-	-	-	-	-	-	-	-	-	5.1	0.9	499
APR 21	0.039	0.013	0.068	0.320	0.014	0.476	31.5	350	0.30	1.9	0.6	372
APR 28	0.067	0.013	0.106	0.460	0.018	0.422	31.5	335	0.15	5.9	0.2	526
MAY 5	0.028	0.003	0.050	0.390	0.020	0.440	30.0	350	0.30	5.6	0.2	783
MAY 12	0.023	0.005	0.016	0.340	0.009	0.381	29.5	345	0.25	4.6	0.6	-
MAY 20	-	-	-	-	-	-	-	-	-	4.8	0.3	480
MAY 26	0.026	0.004	0.040	0.390	0.016	0.404	30.5	345	0.55	4.7	0.2	770
JUN 2	0.023	0.006	0.053	0.370	0.023	0.402	29.5	335	0.05	5.3	0.9	523
JUN 9	0.027	0.007	0.043	0.350	0.010	0.370	30.0	335	0.10	5.0	0.6	592
JUN 16	0.021	0.005	0.059	0.300	0.009	0.386	29.5	340	0.10	5.1	1.0	666
JUN 23	0.027	0.003	0.056	0.330	0.013	0.432	29.5	340	0.15	6.8	1.1	-
JUN 30	0.025	0.006	0.032	0.320	0.006	0.289	28.0	335	-	4.7	0.8	-
JUL 7	-	-	-	-	-	-	-	-	-	3.2	0.5	553
JUL 14	0.021	0.005	0.026	0.310	0.005	0.335	28.0	340	0.10	5.1	0.5	647
JUL 21	-	-	-	-	-	-	-	-	-	5.7	0.3	516
JUL 28	0.035	0.014	0.030	0.430	0.004	0.185	30.0	325	0.05	-	-	1493
AUG 5	0.031	0.013	0.042	0.380	0.005	0.400	29.0	335	0.20	1.9	0.5	127
AUG 11	0.025	0.009	0.016	0.260	0.002	0.273	23.0	330	0.15	2.5	0.7	45
AUG 18	0.023	0.009	0.018	0.250	0.001	0.379	27.0	330	0.15	1.4	0.7	18
AUG 25	0.028	0.017	0.006	0.250	0.001	0.264	27.5	320	0.25	1.1	0.4	-
SEP 2	0.020	0.014	0.014	0.250	0.001	0.229	27.0	265	0.15	1.2	0.7	-
SEP 8	0.011	0.010	0.006	0.220	0.001	0.359	28.0	128	0.25	1.3	0.3	113
SEP 15	0.016	0.008	0.006	0.210	0.003	0.330	28.5	340	0.65	1.0	0.7	110
SEP 22	0.014	0.008	0.022	0.230	0.001	0.379	28.0	335	0.70	1.5	1.2	176
SEP 29	0.016	0.011	0.003	0.210	0.001	0.499	28.0	340	0.35	0.7	0.5	123
OCT 6	0.016	0.012	0.004	0.200	0.002	0.428	28.5	340	0.40	1.0	0.5	133
OCT 14	0.013	0.005	0.014	0.210	0.001	0.409	27.5	340	0.65	1.3	0.5	335
OCT 20	0.016	0.005	0.004	0.250	0.001	0.434	39.0	345	1.60	4.0	0.9	346
OCT 27	-	-	-	-	-	-	-	-	-	2.3	0.5	418
NOV 3	-	-	-	-	-	-	-	-	-	2.0	0.4	358
NOV 10	0.016	0.007	0.012	0.220	0.002	0.408	30.0	350	0.20	-	-	335
NOV 17	0.032	0.014	0.034	0.340	0.019	0.541	30.0	350	0.35	2.6	0.8	233
NOV 24	-	-	-	-	-	-	-	-	-	3.3	0.7	306
DEC 1	0.038	0.012	0.010	0.270	0.002	0.433	30.5	359	0.10	12.0	1.1	289
DEC 8	0.022	0.012	0.042	0.200	0.003	0.442	29.5	340	0.45	1.9	0.3	260
DEC 15	0.023	0.010	0.006	0.260	0.002	0.453	32.0	360	0.60	4.1	1.4	231
DEC 22	0.020	0.000	0.000	0.200	0.000	0.400	30.0	340	0.70	2.5	0.5	-
min.	0.011	0.000	0.000	0.200	0.000	0.185	27.0	128	0.05	0.7	0.1	18
max.	0.203	0.022	0.106	0.680	0.023	0.598	39.0	375	1.60	12.4	1.4	1493
mean	0.031	0.009	0.030	0.307	0.005	0.402	30.0	338	0.35	3.6	0.6	375
s.dev.	0.030	0.005	0.026	0.099	0.006	0.079	2.6	38	0.27	2.5	0.3	260
#samples	41	41	41	41	41	41	41	41	40	49	49	43

9-A Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1981

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN 5	0.023	0.012	0.042	0.310	0.003	0.512	31.5	350	0.40	2.8	0.7	233
JAN 12	0.017	0.014	0.030	0.240	0.002	0.438	29.0	345	0.30	1.6	0.3	135
JAN 19	0.018	0.006	0.008	0.210	0.000	0.420	30.0	350	1.35	1.7	0.5	160
JAN 26	0.026	0.005	0.004	0.250	0.002	0.403	28.5	340	0.35	2.3	0.3	198
FEB 2	0.025	0.005	0.004	0.210	0.002	0.403	33.0	355	0.25	5.6	0.5	434
FEB 9	0.014	0.008	0.016	0.210	0.002	0.408	30.0	345	0.30	0.8	0.2	197
FEB 16	0.012	0.007	0.010	0.130	0.001	0.409	29.0	335	0.25	1.3	0.2	139
FEB 23	0.031	0.023	0.108	0.190	0.015	0.585	38.5	370	0.45	4.1	1.3	103
MAR 2	0.035	0.011	0.050	0.390	0.008	0.677	34.0	385	0.70	3.2	0.6	191
MAR 9	0.041	0.012	0.104	0.450	0.022	0.518	34.0	360	0.30	1.2	1.0	260
MAR 16	0.024	0.005	0.008	0.270	0.002	0.488	31.0	355	0.30	1.8	0.4	352
MAR 23	0.023	0.003	0.010	0.320	0.004	0.400	31.0	345	0.10	7.5	0.3	1014
MAR 30	0.019	0.003	0.068	0.270	0.003	0.597	30.0	350	0.15	4.8	1.6	850
APR 6	0.017	0.007	0.050	0.250	0.006	0.385	30.5	340	0.10	3.4	0.7	549
APR 13	0.070	0.028	0.072	0.870	0.001	0.890	34.5	375	0.15	4.2	0.6	829
APR 21	0.018	0.001	0.054	0.280	0.005	0.425	31.0	335	0.15	2.2	0.9	405
APR 27	0.022	0.008	0.068	0.390	0.008	0.450	31.5	370	0.20	1.7	0.7	186
MAY 4	0.014	0.008	0.058	0.260	0.012	0.445	29.5	345	0.10	1.0	0.6	123
MAY 11	0.027	0.014	0.172	0.460	0.086	0.500	33.0	355	0.75	2.9	0.6	262
MAY 19	0.021	0.008	0.064	0.350	0.000	0.475	30.0	360	0.10	2.4	1.1	230
MAY 25	0.030	0.008	0.088	0.380	0.035	0.460	32.0	365	0.15	2.2	0.5	279
JUN 1	0.020	0.008	0.018	0.260	0.059	0.420	30.0	340	0.05	2.1	0.4	206
JUN 8	0.020	0.005	0.062	0.220	0.005	0.285	29.5	340	0.30	2.0	0.9	270
JUN 15	-	-	-	-	-	-	-	-	-	2.3	0.7	365
JUN 22	-	-	-	-	-	-	-	-	-	2.3	0.6	109
JUN 29	0.013	0.007	0.000	0.150	0.000	0.410	29.0	330	1.50	1.4	0.5	190
JUL 6	0.022	0.008	0.018	0.320	0.086	0.340	28.5	330	0.10	1.7	0.5	255
JUL 13	0.027	0.000	0.050	0.330	0.007	0.585	29.5	330	0.40	2.4	0.7	251
JUL 20	0.019	0.010	0.042	0.230	0.000	0.435	29.0	330	0.10	2.0	1.1	441
JUL 27	0.030	0.018	0.002	0.280	0.000	0.315	27.5	320	0.25	1.1	0.3	31
AUG 3	-	-	-	-	-	-	-	-	-	1.0	0.4	43
AUG 10	-	-	-	-	-	-	-	-	-	1.3	0.6	11
AUG 17	0.034	0.024	0.004	0.290	0.001	0.425	28.0	320	0.70	1.5	0.5	80
AUG 24	-	-	-	-	-	-	-	-	-	0.6	0.3	28
AUG 31	0.034	0.024	0.000	0.250	0.000	0.245	26.0	310	0.60	0.8	0.4	64
SEP 8	0.037	0.031	0.010	0.230	0.001	0.269	26.0	310	0.25	0.5	0.2	37
SEP 14	-	0.004	0.036	-	0.018	0.005	29.0	342	0.45	1.4	0.6	61
SEP 21	0.017	0.007	0.006	0.240	0.001	0.195	27.5	320	0.20	1.7	0.4	169
SEP 28	0.025	0.007	0.004	0.240	0.002	0.450	28.0	330	0.40	0.7	0.3	103
OCT 5	-	-	-	-	-	-	-	-	-	2.0	0.5	167
OCT 12	-	-	-	-	-	-	-	-	-	2.5	0.4	224
OCT 20	0.031	0.020	0.040	0.260	0.005	0.485	30.5	340	0.40	3.7	0.6	1042
OCT 26	-	-	-	-	-	-	-	-	-	3.9	0.3	-
NOV 2	0.031	0.015	0.054	0.290	0.018	0.380	29.5	345	0.15	1.2	0.3	182
NOV 9	0.021	0.008	0.010	0.260	0.002	0.365	29.5	350	0.45	3.4	1.1	657
NOV 16	-	-	-	-	-	-	-	-	-	-	-	326
NOV 23	0.027	0.013	0.014	0.260	0.007	0.490	29.0	344	0.60	2.6	0.7	276
NOV 30	0.032	0.016	0.046	0.240	0.007	0.505	32.5	350	0.45	3.1	0.5	291
DEC 7	0.025	0.013	0.016	0.240	0.003	0.470	29.5	330	0.25	2.1	0.4	215
DEC 14	0.019	0.011	0.002	0.240	0.001	0.525	32.0	355	0.40	1.7	0.4	145
DEC 21	0.026	0.001	0.004	0.200	0.001	0.555	30.0	355	0.40	1.2	0.5	311
DEC 29	-	-	-	-	-	-	-	-	-	-	-	317
min.	0.012	0.000	0.000	0.130	0.000	0.005	26.0	310	0.05	0.5	0.2	11
max.	0.070	0.031	0.172	0.870	0.086	0.890	38.5	385	1.50	7.5	1.6	1042
mean	0.025	0.011	0.036	0.286	0.011	0.439	30.3	344	0.36	2.3	0.6	274
s.dev.	0.027	0.013	0.052	0.312	0.023	0.465	30.7	349	0.47	2.6	0.6	364
#samples	41	42	42	41	42	42	42	42	42	50	50	51

9-A Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1976

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.015	0.000	0.000	0.100	0.000	0.000	28.0	325	0.00	0.5	0.3	3
max.	0.280	0.081	0.400	0.900	0.030	0.900	49.0	390	2.85	16.0	1.1	2038
mean	0.050	0.019	0.055	0.348	0.005	0.351	32.0	347	0.50	4.0	0.8	280
s.dev.	0.041	0.016	0.078	0.146	0.006	0.181	4.9	14	0.48	3.5	0.3	345
#samples	44	44	44	44	44	44	44	43	44	43	8	51

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1977

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.020	0.001	0.010	0.220	0.001	0.107	27.5	320	0.05	0.8	0.1	38
max.	0.154	0.049	0.284	0.660	0.015	0.468	39.5	380	0.50	20.6	9.3	825
mean	0.049	0.017	0.069	0.386	0.005	0.336	30.4	347	0.23	3.2	1.7	209
s.dev.	0.032	0.009	0.063	0.119	0.004	0.076	2.6	13	0.13	4.7	2.4	185
#samples	50	50	49	50	50	50	49	50	49	19	14	50

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1978

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.011	0.003	0.000	0.180	0.001	0.165	26.5	305	0.05	0.4	0.0	29
max.	0.121	0.100	0.350	0.750	0.092	0.730	45.0	396	0.40	9.2	2.1	783
mean	0.034	0.014	0.045	0.328	0.010	0.359	30.2	334	0.23	2.3	0.5	207
s.dev.	0.022	0.016	0.067	0.107	0.018	0.104	3.5	18	0.10	1.8	0.5	175
#samples	38	38	38	38	38	38	38	38	37	38	38	49

Plant # 9 - SOUTH PEEL W.S. (LAKVIEW) 1979

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.012	0.000	0.000	0.028	0.000	0.077	27.5	315	0.05	0.1	0.0	47
max.	0.147	0.054	0.326	1.000	0.070	3.130	41.5	380	1.55	10.8	2.0	652
mean	0.038	0.011	0.045	0.370	0.007	0.436	30.2	345	0.28	3.1	0.7	244
s.dev.	0.030	0.009	0.056	0.150	0.011	0.426	3.0	15	0.25	2.2	0.4	176
#samples	45	45	45	45	45	45	45	45	44	48	47	44

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1980

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.011	0.000	0.000	0.200	0.000	0.185	27.0	128	0.05	0.7	0.1	18
max.	0.203	0.022	0.106	0.680	0.023	0.598	39.0	380	1.60	12.4	1.4	1493
mean	0.031	0.009	0.030	0.307	0.006	0.402	30.0	338	0.35	3.6	0.6	375
s.dev.	0.030	0.005	0.026	0.099	0.006	0.079	2.6	38	0.27	2.5	0.3	260
#samples	41	41	41	41	41	41	41	41	40	49	49	43

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1981

	Tot.P	f.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
min.	0.012	0.000	0.000	0.130	0.000	0.005	26.0	310	0.05	0.5	0.2	11
max.	0.070	0.031	0.172	0.870	0.086	0.890	38.5	385	1.50	7.5	1.6	1042
mean	0.025	0.011	0.036	0.286	0.011	0.439	30.3	344	0.36	2.3	0.6	274
s.dev.	0.010	0.007	0.037	0.117	0.020	0.136	2.3	17	0.30	1.3	0.3	235
#samples	41	42	42	41	42	42	42	42	42	50	50	51

9-B Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1976

		Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
	No	1	1	1	1	1	1	1	1	1	0	0	4
JAN	m	0.060	0.000	0.100	0.400	0.000	0.000	34.0	351	0.65	-	-	218
	SD	-	-	-	-	-	-	-	-	-	-	-	100
	No	4	4	4	4	4	4	4	4	4	4	0	4
FEB	m	0.065	0.025	0.000	0.300	0.000	0.450	38.5	361	0.56	1.23	-	59
	SD	0.019	0.019	0.000	0.245	0.000	0.342	7.6	12	0.18	0.17	-	49
	No	5	5	5	5	5	5	5	5	5	5	3	5
MAR	m	0.060	0.036	0.160	0.460	0.002	0.640	38.0	356	0.90	2.12	0.9	80
	SD	0.000	0.009	0.134	0.114	0.004	0.152	5.7	13	0.19	0.56	0.2	31
	No	2	2	2	2	2	2	2	2	2	2	2	4
APR	m	0.160	0.030	0.150	0.700	0.015	0.500	38.0	353	0.38	7.45	0.9	417
	SD	0.170	0.042	0.212	0.283	0.021	0.141	5.7	18	0.11	7.85	0.2	265
	No	4	4	4	4	4	4	4	4	4	5	1	4
MAY	m	0.047	0.015	0.029	0.363	0.006	0.384	30.3	349	0.20	10.44	1.1	744
	SD	0.006	0.006	0.033	0.127	0.003	0.088	1.3	9	0.21	3.98	-	500
	No	3	3	3	3	3	3	3	3	3	2	0	4
JUN	m	0.042	0.015	0.039	0.340	0.003	0.209	28.7	338	0.15	4.05	-	295
	SD	0.020	0.003	0.021	0.111	0.002	0.043	0.3	4	0.10	1.06	-	107
	No	4	4	4	4	4	4	4	4	4	4	0	4
JUL	m	0.041	0.012	0.026	0.338	0.007	0.297	30.9	344	0.90	5.98	-	778
	SD	0.024	0.009	0.009	0.103	0.004	0.052	4.8	21	1.30	2.77	-	843
	No	5	5	5	5	5	5	5	4	5	5	0	5
AUG	m	0.035	0.012	0.028	0.318	0.005	0.215	28.3	333	0.62	2.58	-	132
	SD	0.016	0.003	0.017	0.072	0.003	0.087	0.7	9	0.64	1.60	-	49
	No	4	4	4	4	4	4	4	4	4	4	0	4
SEP	m	0.036	0.015	0.055	0.318	0.004	0.303	29.6	343	0.40	2.53	-	178
	SD	0.014	0.011	0.076	0.064	0.003	0.101	1.4	6	0.11	2.41	-	84
	No	3	3	3	3	3	3	3	3	3	3	0	4
OCT	m	0.040	0.016	0.029	0.240	0.003	0.320	29.2	358	0.37	3.20	-	238
	SD	0.035	0.009	0.017	0.101	0.002	0.064	0.3	28	0.03	1.85	-	154
	No	5	5	5	5	5	5	5	5	5	5	1	5
NOV	m	0.029	0.012	0.036	0.286	0.005	0.317	30.4	345	0.32	2.82	0.7	216
	SD	0.015	0.007	0.037	0.068	0.004	0.083	1.4	13	0.06	0.65	-	93
	No	4	4	4	4	4	4	4	4	4	4	1	4
DEC	m	0.052	0.033	0.062	0.300	0.008	0.316	30.8	342	0.39	2.18	0.3	110
	SD	0.035	0.033	0.073	0.093	0.009	0.038	0.9	3	0.09	0.64	-	67

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1977

		Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
	No	3	3	3	3	3	3	3	3	3	3	0	4
JAN	m	0.031	0.016	0.034	0.283	0.002	0.352	29.2	350	0.37	1.07	-	77
	SD	0.011	0.001	0.024	0.067	0.001	0.002	1.3	0	0.03	0.15	-	25
	No	5	5	5	5	5	5	5	5	5	5	3	5
FEB	m	0.052	0.017	0.123	0.386	0.004	0.354	32.9	362	0.31	1.20	0.6	69
	SD	0.031	0.013	0.112	0.159	0.002	0.018	2.9	11	0.04	0.48	0.1	27
	No	4	4	3	4	4	4	4	4	4	4	4	4
MAR	m	0.067	0.029	0.139	0.518	0.009	0.387	34.1	360	0.43	1.93	0.6	142
	SD	0.031	0.015	0.054	0.126	0.004	0.098	1.3	7	0.05	0.79	0.4	96
	No	4	4	4	4	4	4	4	4	4	0	0	4
APR	m	0.067	0.022	0.089	0.428	0.005	0.380	31.6	359	0.21	-	-	277
	SD	0.044	0.011	0.046	0.076	0.002	0.057	1.1	3	0.06	-	-	154
	No	5	5	5	5	5	5	4	5	4	0	0	5
MAY	m	0.044	0.018	0.116	0.456	0.010	0.343	30.9	354	0.09	-	-	464
	SD	0.014	0.010	0.074	0.092	0.005	0.030	1.3	10	0.03	-	-	256
	No	4	4	4	4	4	4	4	4	4	0	0	4
JUN	m	0.035	0.012	0.057	0.403	0.007	0.319	28.6	339	0.08	-	-	200
	SD	0.009	0.002	0.042	0.179	0.003	0.011	1.3	2	0.03	-	-	85
	No	4	4	4	4	4	4	4	4	4	0	0	3
JUL	m	0.035	0.013	0.041	0.343	0.006	0.357	28.4	340	0.14	-	-	397
	SD	0.008	0.006	0.022	0.036	0.003	0.037	0.8	4	0.08	-	-	189
	No	5	5	5	5	5	5	5	5	5	0	0	5
AUG	m	0.047	0.011	0.032	0.356	0.004	0.285	29.4	337	0.13	-	-	202
	SD	0.033	0.004	0.021	0.128	0.002	0.065	1.4	3	0.08	-	-	135
	No	4	4	4	4	4	4	4	4	4	0	0	3
SEP	m	0.036	0.014	0.053	0.355	0.005	0.152	28.0	323	0.14	-	-	136
	SD	0.017	0.007	0.052	0.066	0.003	0.044	0.4	3	0.03	-	-	68
	No	5	5	5	5	5	5	5	5	5	0	0	5
OCT	m	0.056	0.015	0.033	0.324	0.003	0.356	29.6	341	0.31	-	-	199
	SD	0.053	0.007	0.020	0.085	0.002	0.039	1.1	10	0.17	-	-	217
	No	4	4	4	4	4	4	4	4	4	4	4	4
NOV	m	0.052	0.016	0.062	0.368	0.004	0.369	29.3	340	0.26	4.40	1.6	121
	SD	0.024	0.003	0.077	0.109	0.005	0.073	0.6	6	0.09	3.73	1.3	73
	No	3	3	3	3	3	3	3	3	3	3	3	4
DEC	m	0.076	0.016	0.047	0.397	0.005	0.399	32.8	354	0.32	8.63	4.5	227
	SD	0.068	0.006	0.032	0.191	0.003	0.030	5.8	19	0.08	10.41	4.4	289

9-C Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1978

		Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN	No	5	5	5	5	5	5	5	5	5	5	5	4
	m	0.038	0.019	0.059	0.310	0.005	0.406	35.5	362	0.35	0.88	0.6	80
	SD	0.019	0.007	0.065	0.080	0.003	0.048	6.3	23	0.05	0.33	0.3	60
FEB	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.035	0.012	0.010	0.268	0.003	0.384	29.9	342	0.28	1.28	0.7	83
	SD	0.028	0.003	0.007	0.056	0.001	0.040	1.7	9	0.06	1.05	0.9	44
MAR	No	2	2	2	2	2	2	2	2	2	2	2	4
	m	0.042	0.026	0.017	0.280	0.004	0.394	30.3	343	0.28	0.90	0.4	104
	SD	0.022	0.016	0.013	0.042	0.001	0.025	0.4	5	0.04	0.14	0.1	23
APR	No	2	2	2	2	2	2	2	2	2	2	2	3
	m	0.030	0.014	0.040	0.295	0.007	0.430	29.8	338	0.33	2.50	1.2	121
	SD	0.002	0.005	0.034	0.049	0.005	0.014	1.1	4	0.04	0.71	1.0	40
MAY	No	5	5	5	5	5	5	5	5	5	5	5	5
	m	0.046	0.015	0.146	0.474	0.040	0.447	32.1	345	0.19	2.40	0.4	335
	SD	0.042	0.011	0.139	0.206	0.037	0.161	3.0	15	0.10	1.43	0.4	224
JUN	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.021	0.006	0.033	0.315	0.006	0.359	28.9	326	0.13	2.75	0.2	311
	SD	0.004	0.002	0.015	0.029	0.002	0.103	0.5	3	0.06	0.89	0.3	180
JUL	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.030	0.004	0.042	0.360	0.006	0.309	29.1	323	0.20	4.55	0.1	442
	SD	0.014	0.001	0.017	0.058	0.002	0.083	2.3	6	0.12	3.24	0.1	244
AUG	No	5	5	5	5	5	5	5	5	5	5	5	5
	m	0.033	0.025	0.030	0.348	0.012	0.264	28.5	320	0.18	2.94	0.3	178
	SD	0.007	0.042	0.023	0.055	0.011	0.069	0.6	6	0.07	1.55	0.3	127
SEP	No	3	3	3	3	3	3	3	3	3	3	3	4
	m	0.038	0.011	0.014	0.280	0.003	0.193	27.2	310	0.15	2.20	0.7	113
	SD	0.033	0.004	0.009	0.087	0.001	0.028	0.6	5	0.00	0.96	0.2	49
OCT	No	3	3	3	3	3	3	3	3	2	3	3	5
	m	0.030	0.006	0.012	0.250	0.002	0.403	28.3	325	0.20	2.97	0.9	155
	SD	0.032	0.001	0.003	0.089	0.000	0.008	0.6	5	0.00	3.06	0.6	115
NOV	No	0	0	0	0	0	0	0	0	0	0	0	3
	m	-	-	-	-	-	-	-	-	-	-	-	341
	SD	-	-	-	-	-	-	-	-	-	-	-	205
DEC	No	1	1	1	1	1	1	1	1	1	1	1	4
	m	0.019	0.009	0.012	0.290	0.003	0.422	30.5	340	0.40	1.30	0.5	225
	SD	-	-	-	-	-	-	-	-	-	-	-	195

9-C Cont'd.

Plant # 9 - SOUTH PEEL M.S. (LAKVIEW) 1979

		Tot.P	P.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
JAN	No	4	4	4	4	4	4	4	4	4	4	4	5
	m	0.023	0.012	0.041	0.290	0.004	0.387	32.9	340	0.40	1.23	0.9	104
	SD	0.007	0.002	0.013	0.089	0.002	0.021	5.9	17	0.17	0.36	0.5	69
FEB	No	4	4	4	4	4	4	4	4	4	4	3	4
	m	0.028	0.012	0.036	0.338	0.004	0.400	32.0	340	0.29	1.38	0.4	95
	SD	0.015	0.002	0.017	0.048	0.002	0.016	2.7	18	0.05	0.75	0.2	19
MAR	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.041	0.017	0.067	0.410	0.008	0.484	31.5	343	0.43	2.28	0.9	81
	SD	0.023	0.008	0.083	0.286	0.007	0.084	4.7	9	0.10	0.94	0.5	26
APR	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.094	0.016	0.050	0.438	0.010	0.484	30.5	354	0.43	4.28	1.1	119
	SD	0.059	0.007	0.045	0.090	0.007	0.138	1.4	14	0.25	3.16	0.6	41
MAY	No	5	5	5	5	5	5	5	5	5	4	4	5
	m	0.036	0.007	0.060	0.404	0.009	0.391	32.0	361	0.41	4.53	0.5	445
	SD	0.011	0.006	0.044	0.080	0.009	0.042	1.7	16	0.64	4.53	0.4	169
JUN	No	4	4	4	4	4	4	4	4	4	4	4	2
	m	0.027	0.007	0.030	0.383	0.004	0.251	28.8	341	0.14	2.83	0.4	362
	SD	0.007	0.002	0.018	0.057	0.003	0.119	1.3	7	0.11	1.05	0.3	40
JUL	No	4	4	4	4	4	4	4	4	4	5	5	3
	m	0.027	0.008	0.035	0.348	0.011	0.247	28.3	338	0.14	3.74	0.8	252
	SD	0.006	0.006	0.022	0.049	0.008	0.051	0.6	3	0.11	1.06	0.2	130
AUG	No	3	3	3	3	3	3	3	3	3	4	4	3
	m	0.040	0.006	0.033	0.423	0.004	0.296	28.2	337	0.13	2.55	0.6	187
	SD	0.018	0.005	0.027	0.155	0.005	0.139	0.3	8	0.03	1.31	0.2	55
SEP	No	4	4	4	4	4	4	4	4	4	4	4	4
	m	0.023	0.008	0.023	0.263	0.003	0.310	27.6	330	0.24	2.50	0.3	222
	SD	0.007	0.002	0.010	0.046	0.001	0.082	0.3	11	0.03	0.91	0.3	66
OCT	No	5	5	5	5	5	5	5	5	5	5	5	5
	m	0.022	0.005	0.014	0.288	0.002	0.363	29.4	345	0.24	3.16	0.6	239
	SD	0.004	0.005	0.012	0.082	0.002	0.031	3.2	14	0.08	2.09	0.2	137
NOV	No	3	3	3	3	3	3	3	3	3	3	3	3
	m	0.075	0.027	0.144	0.580	0.023	1.367	30.3	352	0.20	6.60	0.9	528
	SD	0.047	0.024	0.161	0.372	0.036	1.527	1.0	3	0.09	2.36	0.4	120
DEC	No	1	1	1	1	1	1	1	1	0	3	3	2
	m	0.031	0.008	0.012	0.310	0.004	0.616	30.5	380	-	3.30	0.7	554
	SD	-	-	-	-	-	-	-	-	-	0.78	0.4	50

9-C Cont'd.

Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1980

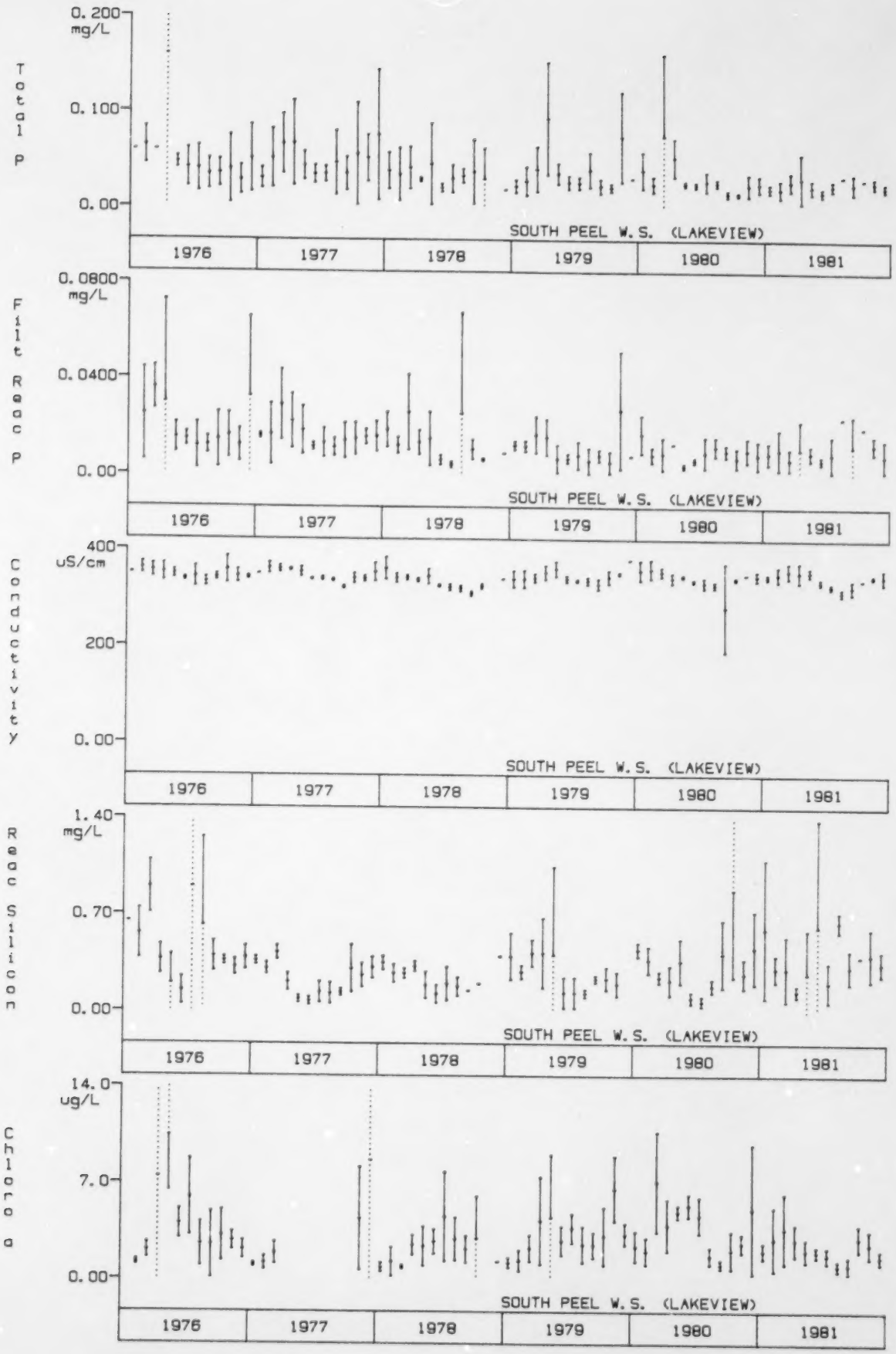
		Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
	No	3	3	3	3	3	3	3	3	3	5	5	4
JAN	m	0.040	0.017	0.025	0.337	0.006	0.510	30.0	358	0.45	2.42	0.5	228
	SD	0.019	0.008	0.023	0.167	0.005	0.079	0.5	20	0.05	1.08	0.3	98
	No	4	4	4	4	4	4	4	4	4	4	4	4
FEB	m	0.025	0.009	0.029	0.263	0.005	0.442	30.8	361	0.38	2.08	0.3	232
	SD	0.008	0.003	0.012	0.032	0.002	0.058	3.9	19	0.10	0.95	0.3	34
	No	4	4	4	4	4	4	4	4	4	4	4	3
MAR	m	0.076	0.009	0.037	0.443	0.005	0.387	33.3	356	0.25	7.10	0.7	440
	SD	0.086	0.007	0.037	0.167	0.003	0.036	3.0	10	0.04	3.63	0.6	130
	No	2	2	2	2	2	2	2	2	2	4	4	4
APR	m	0.053	0.013	0.087	0.390	0.016	0.449	31.5	343	0.23	3.95	0.6	477
	SD	0.020	0.000	0.027	0.099	0.003	0.038	0.0	11	0.11	1.86	0.3	71
	No	3	3	3	3	3	3	3	3	3	4	4	3
MAY	m	0.026	0.004	0.035	0.373	0.015	0.408	30.0	347	0.37	4.93	0.5	678
	SD	0.003	0.001	0.017	0.029	0.006	0.030	0.5	3	0.16	0.46	0.3	171
	No	5	5	5	5	5	5	5	5	4	5	5	3
JUN	m	0.025	0.006	0.051	0.334	0.012	0.376	29.3	337	0.10	5.38	0.9	595
	SD	0.003	0.001	0.011	0.027	0.007	0.054	0.8	3	0.04	0.82	0.2	69
	No	2	2	2	2	2	2	2	2	2	3	3	4
JUL	m	0.028	0.010	0.028	0.370	0.005	0.260	29.0	333	0.08	4.67	0.6	802
	SD	0.010	0.006	0.003	0.085	0.001	0.106	1.4	11	0.04	1.31	0.2	464
	No	4	4	4	4	4	4	4	4	4	4	4	3
AUG	m	0.027	0.012	0.021	0.285	0.002	0.329	27.9	329	0.19	1.73	0.6	63
	SD	0.004	0.004	0.015	0.064	0.002	0.070	0.9	6	0.05	0.61	0.2	57
	No	5	5	5	5	5	5	5	5	5	5	5	4
SEP	m	0.015	0.010	0.011	0.234	0.001	0.369	27.9	282	0.42	1.14	0.8	131
	SD	0.003	0.002	0.007	0.030	0.000	0.096	0.5	92	0.24	0.30	0.3	31
	No	3	3	3	3	3	3	3	3	3	4	4	4
OCT	m	0.015	0.007	0.007	0.220	0.001	0.424	31.7	342	0.88	2.15	0.6	309
	SD	0.002	0.004	0.006	0.026	0.001	0.013	6.4	3	0.63	1.35	0.2	120
	No	2	2	2	2	2	2	2	2	2	3	3	4
NOV	m	0.024	0.011	0.048	0.280	0.011	0.475	30.0	350	0.28	2.63	0.6	322
	SD	0.011	0.005	0.051	0.085	0.012	0.094	0.0	0	0.11	0.65	0.2	65
	No	4	4	4	4	4	4	4	4	4	4	4	3
DEC	m	0.026	0.009	0.015	0.233	0.002	0.432	30.5	348	0.46	5.13	0.8	260
	SD	0.008	0.006	0.019	0.038	0.001	0.023	1.1	10	0.26	4.68	0.5	29

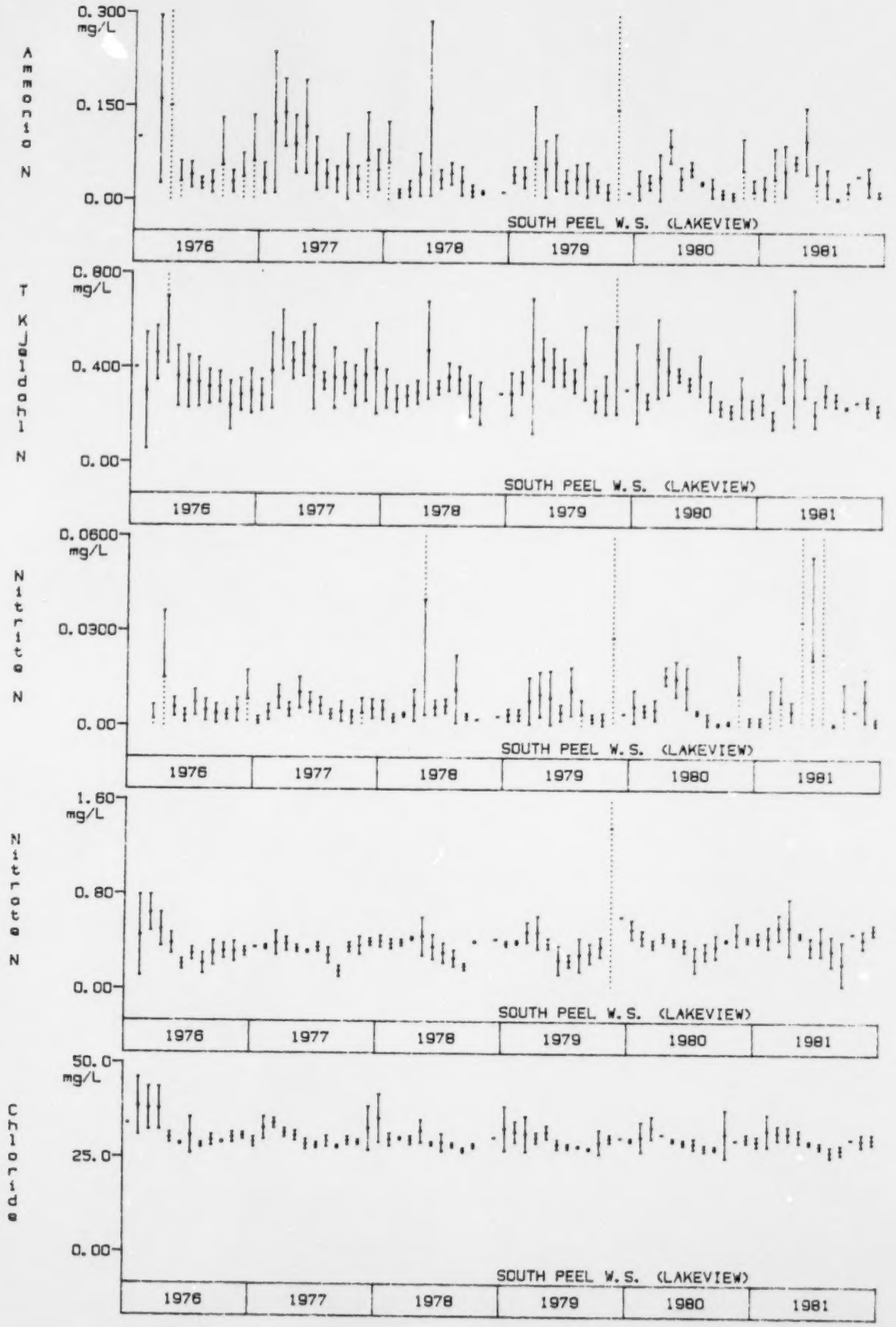
9-C Cont'd.

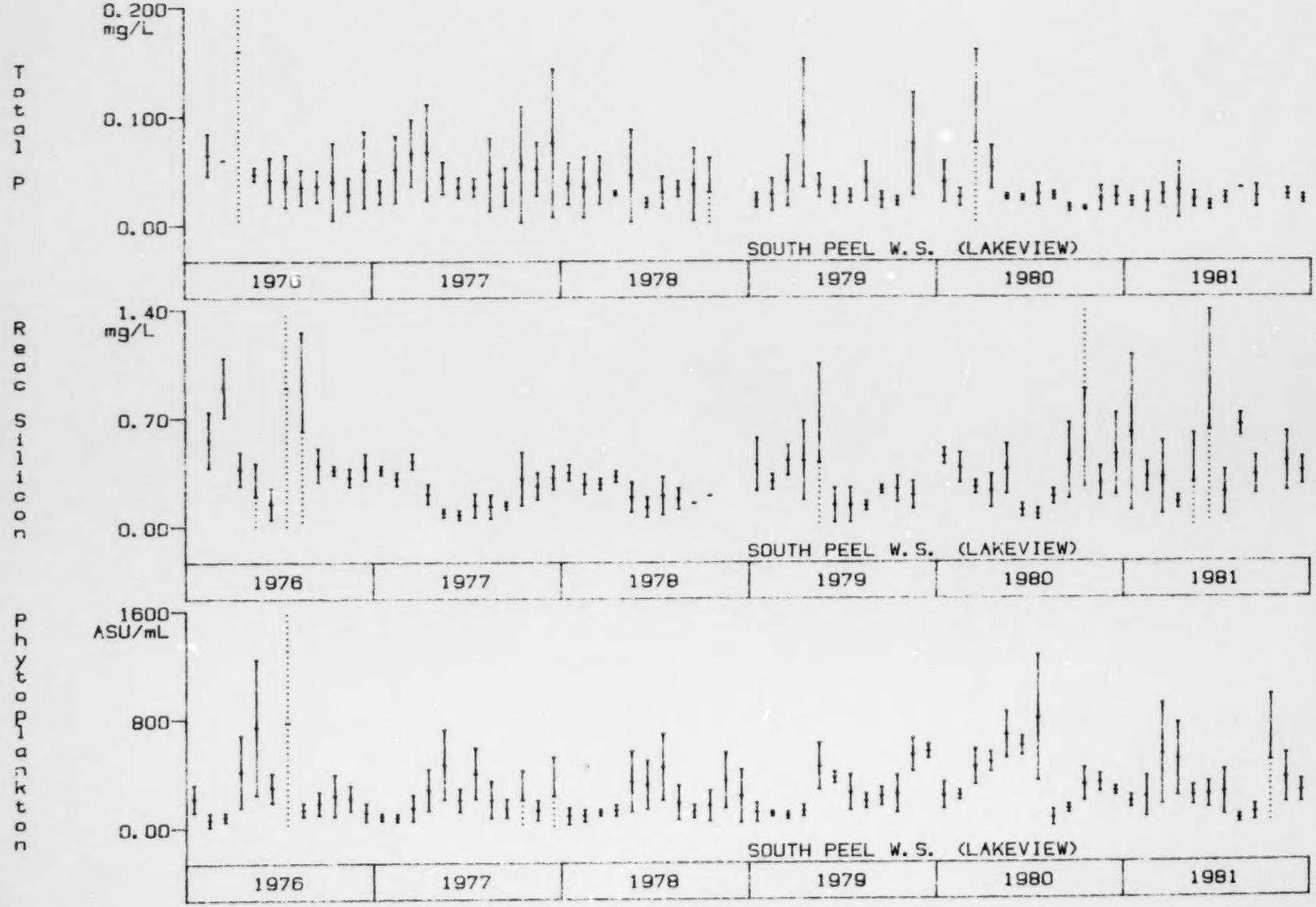
Plant # 9 - SOUTH PEEL W.S. (LAKEVIEW) 1981

		Tot.P	F.r.P	NH3	T.Kjl	NO2	NO3	Cl	Cond	R.Sil	Chl a	Chl b	Phyto
	No	4	4	4	4	4	4	4	4	4	4	4	4
JAN	m	0.021	0.009	0.021	0.253	0.002	0.443	29.8	346	0.60	2.10	0.5	182
	SD	0.004	0.004	0.018	0.042	0.001	0.048	1.3	5	0.50	0.56	0.2	43
	No	4	4	4	4	4	4	4	4	4	4	4	4
FEB	m	0.021	0.011	0.035	0.185	0.005	0.451	32.6	351	0.31	2.95	0.6	218
	SD	0.009	0.008	0.049	0.038	0.007	0.089	4.3	15	0.09	2.29	0.5	149
	No	5	5	5	5	5	5	5	5	5	5	5	5
MAR	m	0.028	0.007	0.048	0.340	0.008	0.536	32.0	359	0.31	3.70	0.8	533
	SD	0.009	0.004	0.041	0.079	0.008	0.106	1.9	16	0.24	2.54	0.5	373
	No	4	4	4	4	4	4	4	4	4	4	4	4
APR	m	0.032	0.011	0.061	0.448	0.005	0.538	31.9	355	0.15	2.88	0.7	492
	SD	0.026	0.012	0.011	0.288	0.003	0.237	1.8	20	0.04	1.14	0.1	270
	No	4	4	4	4	4	4	4	4	4	4	4	4
MAY	m	0.023	0.010	0.096	0.363	0.033	0.470	31.1	356	0.28	2.13	0.7	224
	SD	0.007	0.003	0.053	0.083	0.038	0.023	1.7	9	0.32	0.81	0.3	70
	No	3	3	3	3	3	3	3	3	3	5	5	5
JUN	m	0.018	0.007	0.027	0.210	0.021	0.372	29.5	337	0.62	2.02	0.6	228
	SD	0.004	0.002	0.032	0.056	0.033	0.075	0.5	6	0.78	0.37	0.2	96
	No	4	4	4	4	4	4	4	4	4	4	4	4
JUL	m	0.025	0.009	0.028	0.290	0.023	0.419	28.6	328	0.21	1.80	0.7	245
	SD	0.005	0.007	0.022	0.045	0.042	0.122	0.9	5	0.14	0.55	0.3	168
	No	2	2	2	2	2	2	2	2	2	5	5	5
AUG	m	0.034	0.024	0.002	0.270	0.001	0.335	27.0	315	0.65	1.04	0.4	45
	SD	0.000	0.000	0.003	0.028	0.001	0.127	1.4	7	0.07	0.36	0.1	28
	No	3	4	4	3	4	4	4	4	4	4	4	4
SEP	m	0.026	0.012	0.014	0.237	0.006	0.230	27.6	326	0.33	1.08	0.4	93
	SD	0.010	0.013	0.015	0.006	0.008	0.184	1.3	14	0.12	0.57	0.2	58
	No	1	1	1	1	1	1	1	1	1	4	4	3
OCT	m	0.031	0.020	0.040	0.260	0.005	0.485	30.5	340	0.40	3.03	0.5	473
	SD	-	-	-	-	-	-	-	-	-	0.92	0.1	490
	No	4	4	4	4	4	4	4	4	4	4	4	5
NOV	m	0.028	0.013	0.031	0.263	0.009	0.435	30.1	347	0.41	2.58	0.7	346
	SD	0.005	0.004	0.022	0.021	0.007	0.073	1.6	3	0.19	0.97	0.3	182
	No	3	3	3	3	3	3	3	3	3	3	3	4
DEC	m	0.023	0.008	0.007	0.227	0.002	0.517	30.5	347	0.35	1.67	0.4	247
	SD	0.004	0.006	0.008	0.023	0.001	0.043	1.3	14	0.09	0.45	0.1	83

9-C Cont'd.


Total P
0.200
mg/L
0.100
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Filt Reac P
0.0800
mg/L
0.0400
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Conductivity
400
uS/cm
200
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Reac Silicon
1.40
mg/L
0.70
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Chloro a
14.0
ug/L
7.0
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981


Ammonia N
0.300 mg/L
0.150
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
T Kjeldahl N
0.800 mg/L
0.400
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Nitrite N
0.0600 mg/L
0.0300
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Nitrate N
1.60 mg/L
0.80
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Chloride
50.0 mg/L
25.0
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981


Total P
0.200
mg/L
0.100
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Reac Silicon
1.40
mg/L
0.70
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981
Phytoplankton
1600
ASU/mL
800
0.00
SOUTH PEEL W.S. (LAKEVIEW)
1976
1977
1978
1979
1980
1981